

EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
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CIRCULAR NO. A-16

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Programing and coordination of surveying and mapping

1. Purpose. Procedures for programing and coordination of the surveying and mapping activities of the Government have been developed and issued from time to time, in cooperation with the Federal agencies concerned with such operations. This Circular is intended to provide for certain refinements and improvements in these procedures, in order to insure that surveying and mapping activities may be directed toward meeting the needs of Federal and State agencies and the general public, and will be performed expeditiously, without duplication of effort.

2. Authority. Executive Order No. 9094, dated March 10, 1942, directs the Director of the Bureau of the Budget to perform such functions as may be necessary to further coordinate and promote the improvement of the surveying and mapping activities of the Government, and to perform the functions previously discharged by the Federal Board of Surveys and Maps under Executive Order No. 3206, dated December 30, 1919. In accordance with these Executive Orders, the Bureau of the Budget is directed "to make recommendations to the several departments or to the President for the purpose of coordinating all map-making and surveying activities of the Government and to settle all questions at issue between the Executive Departments relating to surveys and maps insofar as their decisions do not conflict with existing laws."

3. Coverage. This Circular is concerned with (a) surveys and maps which convey knowledge of our natural resources, such as topography, geology, soils, vegetation, and hydrology; and (b) other types of surveys, maps and charts of value to our national welfare, such as geodetic control surveys, cadastral surveys, and aeronautical and nautical charts.

Exhibit A of this Circular establishes procedures for programing and coordination of domestic topographic mapping.

It will be noted that reports on performance and costs are to be prepared in accordance with the procedure outlined in the manuals "Revised Reporting Procedure-Performance and Cost Accounting for Topographic and Planimetric Mapping," dated November 1951, and "Map Production -- Performance and Cost Accounting for Photogrammetry and Planetable Surveying," dated January 1942. To facilitate the preparation of reports on performance and costs, it is planned in the near future to consolidate these two manuals in the form of an additional exhibit to this Circular.

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Procedures are being developed for geologic mapping, and are planned to be issued as another exhibit to this Circular. As the need for formalizing existing procedures for programing and coordinating the other types of surveys and maps is indicated, additional exhibits will be issued.

4. Departmental representation. To meet its responsibilities and to facilitate the coordination of surveying and mapping activities, the Bureau of the Budget will utilize the working relationships suggested in letters, dated December 23, 1949, from the Director of the Bureau of the Budget to the Secretaries of the Departments of Agriculture, Army, Commerce, and Interior, and earlier letters to other Departments and establishments. Under these arrangements, the representatives officially designated to serve in a liaison capacity between departments or establishments and the Bureau of the Budget should be responsible for (a) assisting in the development of integrated annual surveying and mapping programs, (b) supplying the maps, reports, and text material required under this Circular, and (c) assisting in formulating, modifying, and maintaining procedures for programing and coordination of surveying and mapping activities as may be required.

FREDERICK J. LAWTON
Director

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Procedures for
Programing and Coordination
of
Federal Topographic Mapping Activities

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INTRODUCTION

During the period 1941-1952 the Bureau of the Budget has obtained from the Federal map-using agencies annual graphic statements showing their topographic mapping needs in terms of priorities. These priority statements have served as the principal basis for the development of the annual domestic topographic mapping programs. With a view toward closer and more complete coordination between map-users and map-makers, this procedure has been re-examined in the light of this experience, and certain modifications have been made to insure a more realistic relation between mapping needs and map production. The modified procedure as outlined in this Exhibit, also correlates the programming of mapping operations more directly with the budgeting process.

Exhibit A is concerned with the standard quadrangle type of topographic mapping of the United States, its territories and possessions. The quadrangles are commonly 15-minutes of latitude by 15-minutes of longitude, or 7 1/2-minutes of latitude by 7 1/2-minutes of longitude. For many areas the 15-minute series, produced for public distribution at a scale of 1:62,500 (1:63,360 for Alaska), is the type preferred for an all-purpose, standard topographic map. In other areas, particularly those where considerable development has taken place or various types of public improvements are contemplated, the 7 1/2-minute quadrangle, usually published at a scale of 1:24,000, is the most acceptable. Editions of these maps restricted to military use are at scales of 1:50,000 and 1:25,000.

The reports to be submitted to the Bureau of the Budget by the map-making and map-using departments and establishments are described in detail in Parts I and II. Part III provides a summary listing of these reports to facilitate understanding of the requirements, and to provide a ready reference as to when the reports are due.

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PART I

PROGRAMING

A. Status of topographic mapping.

1. Status maps. Status maps of the United States and of the territories and possessions will be prepared and published annually by the Department of the Interior (Geological Survey) showing the status of its mapping and that performed by other agencies. These maps will show, as of January 1 of each year, the areas in which topographic maps have been published or in which mapping is in progress and publication is expected within three years. Copies of the status maps will be submitted to the Bureau of the Budget on January 1 of each year, and the Bureau of the Budget will forward copies to those agencies that prepare reports on priorities of mapping needs so that the preparation of their priority statements may be facilitated.
2. Agency status reports. In order to assist in the preparation of the status maps, each map-making agency will report the status of its topographic mapping activities to the Geological Survey by December 1 of each year. Maps on transparent base, procurable from the Bureau of the Budget, are to be used in making such reports. These mapping reports will be returned to the originating agencies for use in subsequent reports.
 - a. Agency status of mapping should be indicated in quadrangle units on these transparent base maps as follows:
 - (1) Maps ready for reproduction. All quadrangles for which topographic mapping has been completed and finished drawings have been prepared for reproduction should be shown by full coverage in carmine (GSA-53P29286). These quadrangles will be shown as "published" on the status map prepared by the Geological Survey.
 - (2) Mapping in progress. All quadrangles for which topographic mapping has been initiated and has progressed to the stage where it is reasonably certain that published maps will be available within three years will be shown by full coverage in azure (GSA-53P29286).
 - b. The following title and legend should appear on each agency report:

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(Name of department or establishment)

(Name of bureau or organization)

STATUS OF
TOPOGRAPHIC MAPPING

As of December 1, 19_____

☐ Maps ready for reproduction

☐ Mapping in progress

B. Priority of topographic mapping needs.

1. Report of needs of map-using agencies. In order that the requirements of the map-using agencies may be reflected in the over-all topographic mapping program, each Federal agency having significant need for such mapping shall prepare annually a priority statement of its mapping needs. The priority statements are to be submitted to the Bureau of the Budget by the department concerned on March 1 of each year. A separate statement should be submitted for each map-using bureau or organization in a department or establishment. Each statement shall consist of (a) a set of maps on transparent base procurable from the Bureau of the Budget, showing the areas in which topographic mapping is desired in four orders of priority, and (b) supporting text material. The text material shall indicate the purpose to be served by the desired mapping and its essentiality to the programs of the map-using agency. The first priority map should indicate areas in which maps need to be available within three years from the date of submittal of the priority statement; second priority, within four years; third, within five years; and fourth, after five years.
2. Planning priorities. In order to develop realistic estimates of total requirements, it is suggested that each map-using agency assume a production rate of about four or five hundred 15-minute quadrangles a year for the entire United States in preparing its priority statements. Expressed needs for mapping in each of the first three orders of priority should be limited to approximately this rate of production. It should be clearly understood that priorities must continue to be expressed for mapping which is in progress, in order to avoid the possibility that work might be suspended because of a reduced expression of needs. The suggested limitations on priority statements, as outlined in this paragraph, do not apply to priorities indicated

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for quadrangles in progress, since that mapping can ordinarily be completed in less than three years.

3. Scale of maps. Mapping will usually be for publication in 15-minute quadrangles on a scale of 1:62,500 (1:63,360 for Alaska) except in areas of considerable economic importance where 7 1/2-minute quadrangles will be published, usually on a scale of 1:24,000. The base maps show only the 15-minute grids and the fact that no further subdivision is made by the map-using agency will be considered a request for that type of mapping. If the 7 1/2-minute quadrangles are desired the grids should be subdivided in black ink to show the 7 1/2-minutes, or a covering statement can be added on the transparent base maps.
4. Instructions applicable to priority maps. Priority of topographic mapping needs shall be indicated on separate maps by full coverage in the following colors:
 - a. First priority (needed within 3 years) - carmine (GSA-53P29286)
 - b. Second priority (needed within 4 years) - azure " "
 - c. Third priority (needed within 5 years) - orange " "
 - d. Fourth priority (needed after 5 years) - golden yellow " "

The title and legend of each map should appear as follows:

(Name of department or establishment)

(Name of bureau or organization)

PRIORITY OF
TOPOGRAPHIC MAPPING NEEDS

March 1, 19 _____

☐ First priority (maps needed within 3 years).

A similar title with corresponding changes in priority symbol is to be used for maps indicating second, third, and fourth priorities.

C. Programing Federal mapping.

1. Bases for programing. The priority statements of the Federal map-using agencies and statements indicating the needs of the States shall serve as the principal bases for the programing of Federal mapping. After appropriate review, the Bureau of

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the Budget will forward priority statements received from the various departments and establishments (Part I-B) to the Department of the Interior (Geological Survey) to be utilized, along with the expressed needs of the States, as the basis for developing its annual mapping program designed to meet Nation-wide needs for mapping. The annual programs of the other mapping agencies should be designed to meet their own particular or specialized needs which normally would not represent needs that are Nation-wide in character.

In specifying the programing procedure outlined herein it is recognized that the map-making agencies have entered into certain memorandums of understanding for the purpose of clarifying their respective areas of responsibility and providing for cooperative action, including making the facilities of the civil agencies available for defense mapping purposes. It is not intended that this Circular shall modify or invalidate these agreements, but that they shall continue to serve as basic guides for the development of the annual programs of the individual agencies.

2. Preliminary agency programs. A preliminary mapping program will be prepared on a transparent base by each of the Federal map-making agencies, and submitted by the department concerned to the Bureau of the Budget by May 15 of each year. This preliminary program shall show the areas in which the map-making agency proposes to conduct mapping operations during the second succeeding fiscal year. These maps will be returned to the reporting agencies by the Bureau of the Budget for use by them as indicated in paragraph 3 below.
3. Tentative agency programs. Each Federal map-making agency, after collaboration with the appropriate map-using agencies, shall prepare a map on transparent base showing the areas in which the agency proposes to do topographic mapping with the funds indicated by the ceiling established by its department and anticipated from the States or other agencies for the fiscal year referred to in paragraph 2 above. The tentative program map is to be submitted by the department concerned to the Bureau of the Budget by August 15 of each year, and may be prepared by correcting the map submitted on May 15. The map will be returned to the agency by the Bureau of the Budget for use in preparing the departmental program map as specified in paragraph 4 below.
4. Departmental programs. Each Federal map-making agency will prepare a program map on transparent base indicating those areas which its department proposes to map during the fiscal year referred to in paragraphs 2 and 3 above within the

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structure of an integrated national mapping program. The map may be prepared by correcting the one submitted on August 15. The departmental program map is to be submitted by the department concerned to the Bureau of the Budget by September 15 of each year as part of the justification for the departmental budget estimate, and should reflect any changes suggested by the Bureau of the Budget during its review of the tentative programs.

5. Instructions applicable to the program map reports. In the preparation of the three program map reports, the 15-minute quadrangle outline will be used to show areas where mapping is proposed; where the unit of production is to be the 7 1/2-minute quadrangle, the 15-minute quadrangle will be subdivided with inked lines. Quadrangles on which an agency proposes to do only part of the operations should be identified with an explanatory note. New work to be started should be indicated by full coverage in carmine (GSA-53P29286). Mapping started in previous years that should be continued or completed during the fiscal year that is being programmed should be indicated by full coverage in green (GSA-53P29286). The title and legend for the maps should appear as follows:

(Name of department or establishment)

(Name of bureau or organization)

TOPOGRAPHIC MAPPING PROGRAM
for Fiscal Year 19__

Preliminary agency program Submitted May 15, 19__

Tentative agency program Submitted Aug.15, 19__

Departmental program..... Submitted Sept.15,19__

☐ New work to be started.

☐ Mapping to be continued or completed.

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PART II

OPERATIONS

A. Schedules of operations.

1. Tentative schedules of operations. A map on transparent base, showing the areas in which each agency proposes to conduct topographic mapping operations during the current fiscal year with the funds appropriated by the Congress or otherwise made available, is to be prepared by each Federal map-making agency and submitted by the department concerned to the Bureau of the Budget by August 1 of each year (assuming that funds will be available on July 1). These tentative schedules of operations maps should be prepared in cooperation with the appropriate agencies requiring map information and, to the extent practicable, should conform with the program maps (Part I, C. 4) submitted with the budget estimates of the previous year, except for necessary adjustments to comply with the sums appropriated.
2. Final schedules of operations. The Bureau of the Budget will review the tentative schedules of operations of the various map-making agencies and issue such advice and guidance as will promote efficient placement of the Government-wide topographic mapping effort. All revisions, resulting from the advice of the Bureau of the Budget, will be reported graphically in the form of a final schedule of operations which may be prepared by correcting the map submitted on August 1. This report is to be submitted by each department concerned to the Bureau of the Budget by August 15 (assuming that funds will be available on July 1). These final schedules of operations maps are to be used by the Federal map-making agencies for controlling operations during the current fiscal year. It is the responsibility of each department, through its departmental liaison representative, to provide the Bureau of the Budget with advance notification of any significant variation in the adopted final schedule. Such variations should be justified with supporting data.
3. Instructions applicable to above two map reports.
 - a. The maps required for these reports will have the 15-minute quadrangle outline for delineating the areas to be mapped. Where 7 1/2-minute quadrangles are to be the units of production, the 15-minute quadrangles will be divided by inked lines as required. Quadrangles on which an agency proposes to do only part of the operations should be identified with an explanatory note.

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b. The scheduled areas of operations for the current fiscal year will be given a solid crayon color as specified below. The degree of progress indicated for each quadrangle will be that scheduled to be the most advanced of any operation on the quadrangle during the fiscal year. Carmine color (GSA-53P29286) will indicate that the map will be in the process of compilation during the fiscal year. Green (GSA-53P29286) will indicate that the map will be in the process of reproduction before the end of the fiscal year. Brown (GSA-53P29286) will indicate that the map will be published before the end of the fiscal year.

c. The title and legend of the map should appear as follows:

(Name of department or establishment)

(Name of bureau or organization)

TOPOGRAPHIC MAPPING

SCHEDULE OF OPERATIONS
For Fiscal Year 19__

Tentative schedule submitted August 1, 19__

Final schedule submitted August 15, 19__

☐ Quadrangles to be in process of compilation.

☐ Quadrangles to be in process of reproduction.

☐ Quadrangles to be published.

B. Progress of operations.

1. Quarterly reports. Quarterly reports on the progress of mapping operations during each fiscal year are to be prepared by each Federal map-making agency and submitted by the department concerned to the Bureau of the Budget as follows:

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1st quarter progress report October 31
2nd quarter progress report January 31
3rd quarter progress report April 30
4th quarter progress report July 31

2. Composition of reports. The quarterly reports will consist of two parts, a map presentation and text materials.

- a. Map presentation. The map required for this report will be on transparent base and will show those quadrangles on which funds have been or will be expended during the current fiscal year. Each quarterly report will show progress since the beginning of the fiscal year. The unit of reporting will be the 15-minute quadrangle or the 7 1/2-minute quadrangle depending on the basic units of mapping being executed. The degree of progress will be indicated by inked symbols as reproduced in the legend below. Each symbol will indicate that all preceding operations have been completed and that the quadrangle is ready for the next operation. The various degrees of progress reported by the symbols are defined as follows:
- (1) Authorized. Quadrangles included in the mapping program for which funds are available for the initiation of work.
 - (2) Aerial photography. Quadrangles in which all necessary photography for mapping has been received and accepted.
 - (3) Basic control has been completed when all third and higher orders of leveling, triangulation and transit traverse (with attendant monuments) have been established as required for topographic quadrangle mapping of the area. Computations need not necessarily be completed.
 - (4) All control. Quadrangles in which all necessary picture control for the aerial photography used, as well as basic control, has been completed.
 - (5) Office compilation includes all stereo compilation. This may be only a planimetric base or may include complete contouring as well.
 - (6) Field completion includes all field work, such as planetable contouring, field revision, field completion, and checking of photo interpretation and cultural details.

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- (7) Office completion involves making all necessary corrections to the manuscript that were suggested during field completion, the preparation of color-separation drafting for reproduction, and editing. When office completion has been accomplished, the map is ready for reproduction.
- (8) Reproduced. Quadrangles for which published copies of maps are available.

The title and legend on the quarterly progress map should appear as follows:

(Name of department or establishment)

(Name of bureau or organization)

TOPOGRAPHIC MAPPING
PROGRESS OF OPERATIONS
Fiscal Year 19__

____ Quarter

Submitted (Date)



Authorized

- - - OPERATION COMPLETED - - -



Aerial photography



Basic control



All control



Office compilation



Field completion



Office completion



Reproduced

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- b. Text materials. The text materials to be furnished as a portion of this quarterly progress report will provide the current status of the four subjects listed below. It is not the intent of this provision to require repetitive material in each report. Only new developments that could conceivably have a significant effect on topographic mapping in the Federal service or a development that might be of particular help to an office should be included.
- (1) An account of any significant new technical or management procedures, or changes in procedures, inaugurated or being considered shall be submitted. Past procedures and those that are well known and accepted or of intraoffice interest only need not be included. The report should not attempt to go into detail but should merely offer enough information to indicate the usefulness of the development.
 - (2) A list of any new or revised publications or new types of topographic maps shall also be submitted. This list of new or revised publications should include books, booklets, monographs, papers or articles formally prepared for the use of the mapping profession in general and for the public. Map sheets reported here should be only those presenting new techniques in compilation and reproduction. Proposals for the compilation of publications and topographic maps of other than routine nature may be made in this report.
 - (3) A list and description of any major instruments or items of equipment which are being developed shall also be submitted. Any piece of equipment or instrument developed by a mapping agency should be reported so that the need, type of article produced, and results accomplished are briefly described.
 - (4) A full statement on personnel as of September 30 shall be submitted with the October 31 report. Subsequent significant staff deletions or additions are to be reported only where the changes would affect the volume or character of the mapping work of the agency. This statement may be in the form of an organizational chart or a table and should show titles and number of persons in each grade. When organizational structure is changed significantly a list of the personnel involved will be submitted with the next quarterly report.

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C. Performance and cost reporting.

1. Quarterly reports. Performance and cost reports are to be prepared by each Federal map-making agency to cover its operations during each fiscal year. These reports are to cover the period from the beginning of the year to the end of each quarter and are to be submitted by the department concerned to the Bureau of the Budget as follows:

First quarter report Due November 30

Second quarter report Due February 28

Third quarter report Due May 31

Fourth quarter report Due August 31

2. Composition of reports. These reports will consist of records of performance and costs of comparable operations, prepared in accordance with the procedure outlined in the manuals "Revised Reporting Procedure--Performance and Cost Accounting for Topographic and Planimetric Mapping," dated November 1951, and "Map Production Performance and Cost Accounting for Photogrammetry and Planetable Surveying," dated January 1942.

D. Equipment Inventory.

An annual report is to be made by each map-making agency of the major items of equipment on hand in each agency. This report may be in tabular form provided sufficient details are given, or it may be made on file cards available from the Bureau of the Budget. This report is to be submitted by the department concerned to the Bureau of the Budget annually by August 1.

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PART III

SUMMARY LIST OF

TOPOGRAPHIC MAPPING REPORTS

<u>Date Due</u>	<u>Map Report</u>	<u>Section</u>
January 1	STATUS OF TOPOGRAPHIC MAPPING Published annually by the Geological Survey	I-A
January 31	PROGRESS OF OPERATIONS Second quarter progress report for current fiscal year Prepared by map-making agencies	II-B
February 28	PERFORMANCE AND COST REPORTING Second quarter report for current fiscal year Prepared by map-making agencies	II-C
March 1	PRIORITY OF TOPOGRAPHIC MAPPING NEEDS Prepared annually by map-using agencies	I-B
April 30	PROGRESS OF OPERATIONS Third quarter progress report for current fiscal year Prepared by map-making agencies	II-B
May 15	TOPOGRAPHIC MAPPING PROGRAM Preliminary agency program for second succeeding fiscal year Prepared by map-making agencies	I-C
May 31	PERFORMANCE AND COST REPORTING Third quarter report for current fiscal year Prepared by map-making agencies	II-C
July 31	PROGRESS OF OPERATIONS Fourth quarter progress report for previous fiscal year Prepared by map-making agencies	II-B
August 1	SCHEDULE OF OPERATIONS Tentative schedule for current fiscal year Prepared by map-making agencies	II-A

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<u>Date Due</u>	<u>Map Report</u>	<u>Section</u>
August 1	EQUIPMENT INVENTORY Prepared annually by map-making agencies	II-D
August 15	TOPOGRAPHIC MAPPING PROGRAM Tentative agency program for succeeding fiscal year Prepared by map-making agencies	I-C
August 15	SCHEDULE OF OPERATIONS Final schedule of operations for current fiscal year Prepared by map-making agencies	II-A
August 31	PERFORMANCE AND COST REPORTING Fourth quarter report for previous fiscal year Prepared by map-making agencies	II-C
September 15	TOPOGRAPHIC MAPPING PROGRAM Departmental program for succeeding fiscal year Prepared by map-making agencies	I-C
October 31	PROGRESS OF OPERATIONS First quarter progress report for current fiscal year Prepared by map-making agencies	II-B
November 30	PERFORMANCE AND COST REPORTING First quarter report for current fiscal year Prepared by map-making agencies	II-C
December 1	STATUS OF TOPOGRAPHIC MAPPING Agency Status Reports Prepared by map-making agencies for use of Geological Survey	I-A

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